

**TESTIMONY OF
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**ON BEHALF OF:
NATURAL RESOURCES DEFENSE COUNCIL**

**BEFORE THE U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT**

**ON THE HEARING COVERING LEGISLATION TO
REAUTHORIZE THE SAFE DRINKING WATER ACT STATE REVOLVING FUND,
THE “Assistance, Quality, and Affordability Act of 2010” (“AQUA”).**

May 13, 2010

Good morning Chairman Markey, Ranking Member Upton and members of the committee. Thank you for this opportunity to testify on the “Assistance, Quality, and Affordability Act of 2010” (“AQUA”).

I am Dr. Sarah Janssen, a staff scientist in the Health Program at the Natural Resources Defense Council (NRDC). I am a physician, board certified in Occupational and Environmental Medicine and have a clinical appointment at the University of California, San Francisco in the Department of Medicine. I also have a Master’s degree in Public Health and a Ph.D. in Reproductive Biology. I have expertise in chemicals that interfere with the natural action of hormones known as “endocrine disrupting chemicals”. NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment.

NRDC’s Health and Environment program focuses on reducing human exposure to toxic chemical pollutants in air, water, food, shelter, the workplace and our homes. The Program has worked for many years to identify endocrine disrupting chemicals by supporting previous amendments to Food Quality Protection Act (FQPA) and the Safe Drinking Water Act (SDWA) which established the Endocrine Disrupting Screening and Testing Program (EDSP) at the U.S. Environmental Protection Agency (EPA). NRDC participated in the initial expert panel, EDSTAC, which created a set of recommendations for the development and execution of the EDSP, and has taken legal action over delays in the implementation of the EDSP at EPA. We have also led efforts to reduce exposure to endocrine disrupting chemicals found in consumer products such as phthalates found in toys and air fresheners, bisphenol A (BPA) in food cans, “antibacterial” chemicals in hand soaps and flame retardants in home furnishings and electronics. We have also worked for many years to improve the quality of our drinking water, leading the efforts to establish strong health-protective standards for both well-known contaminants, such as arsenic, perchlorate, cryptosporidium and pesticides, and raise awareness about “emerging contaminants” such as pharmaceuticals and personal care products.

A Dependable Water Infrastructure Is Essential for Public Health.

We strongly support increased investment in our nation’s water infrastructure which desperately needs to be upgraded and restored. The recent broken water main that left two million Bostonians without clean drinking water for four days is one prominent example of a growing nationwide problem that will only increase in frequency as our aging drinking water infrastructure begins to reach the end of its useful life. Currently, we lose an estimated 7 billion gallons of water each day from leaking pipes.¹ The American Water Works Association estimates that there are more than 200,000 breaks every year in the U.S. causing a loss of \$2.8 billion in revenue annually.² At the same time, an often overlooked consequence of even small leaks in water distribution lines is that when these lines are placed in close

¹ American Society of Civil Engineers. Report Card for America’s Infrastructure.
<http://www.infrastructurereportcard.org/fact-sheet/drinking-water>

² U.S. Environmental Protection Agency. Review Draft: Control And Mitigation Of Drinking Water Losses In Distribution Systems. 2009. Available at http://www.epa.gov/safewater/pws/pdfs/analysis_wa-03_water_loss_doc_final_draft_v62.pdf

proximity to sewer lines, a substantial amount of contaminated water can be pulled into pipes resulting in waterborne disease outbreaks.³

In 2007, EPA estimated that U.S. municipalities will need \$334 billion over the next 20 years to protect public health and ensure compliance with the Safe Drinking Water Act.⁴

Since the 1996 Amendments to the Safe Drinking Water Act, the Drinking Water State Revolving Fund (DW SRF) has been one of the main sources of money for states to distribute to municipalities to fund drinking water infrastructure improvement projects. With continued funding through the SRF program, drinking water utilities can work to improve the availability and quality of drinking water that they provide to their customers.

However, federal funding for the DW SRF has declined since 2002, even without adjusting for inflation. Since 2004, when authorization for the SRF expired, Congress has continued to appropriate monies for the Fund, but with each budget up to 2009, those numbers had been dropping steadily—despite EPA's needs analysis showing that the nation's water systems need much more funding. The Assistance, Quality, and Affordability Act of 2010 (AQUA), if enacted, will authorize a much needed increase in funding for the DW SRF (\$1.5 billion in 2011, \$2 billion in 2012 and 2013, \$3.2 billion in 2014, and \$6 billion in 2015.) The 1996 amendments authorized appropriations for the DWSRF program of \$599 million for FY1994 and \$1 billion for each of FY1995 through FY2003 but funds appropriated by Congress never exceeded \$850 million except for the very first year in 1997 and this past year under the stimulus package. We support this much needed increase in authorization for funding and call on Congress for full appropriations up to the authorized level to continue the much needed work on our drinking water infrastructure.

AQUA also provides incentives for public drinking water systems to ensure that they can better provide clean and affordable drinking water to their customers well into the future. Currently, there are three types of applications that receive priority under SDWA: those which address the most serious risks to human health, those that assure compliance with the requirements of the Safe Drinking Water Act, and those that assist systems most in need. AQUA would add a fourth priority – consideration of sustainability and the future of the water utility. As such, if a project will prevent a system from deteriorating to a point where public health is put at serious risk, this project also receives priority for funding. This proactive prioritization of funding could be just as important to protect public health as are projects to fix current public health problems – and potentially costing less in the long-run.

Once priority projects are identified, AQUA establishes other criteria by which applications can be weighted. This provision allows a state to give consideration to applications that include, for example, measures to improve a system's water and energy efficiency or protect the source water. As a result, a

³ U.S. Centers for Disease Control and Prevention. Panel Summary from the 2000 Emerging Infectious Diseases Conference in Atlanta, Georgia. Panel on Waterborne Diseases. Emerging Infectious Diseases Vol. 7, No. 3 Supplement Jun 2001. http://www.cdc.gov/ncidod/eid/vol7no3_supp/hunter.htm

⁴ U.S. Environmental Protection Agency. Drinking Water Infrastructure Needs Survey and Assessment. Fourth Report to Congress. 2007.

project to fix leaking pipes, thereby helping staunch the loss of billions gallons of water every day, could be given more weight than a project that had no such environmental benefit.

Importantly, AQUA also gives special priority to poor communities that may have difficulty affording the system improvements necessary to comply with new drinking water standards. Rather than relying upon a system of variances that would result in some communities drinking water below federal safety standards, the bill ensures that funding is prioritized to these communities so that they can meet the standards without facing severe economic hardship. As a result, all Americans are assured access to both safe and affordable drinking water, regardless of their socioeconomic status.

Reducing Lead in Drinking Water.

Lead is a common environmental contaminant which is known for frequently contaminating older homes because of lead paint. However, lead is also found as a drinking water contaminant due to the use of lead or lead solder in water pipes. Lead is absorbed across the gut after ingestion and builds up in soft tissue -- kidneys, bone marrow, liver, and brain -- as well as bones and teeth. Absorption rates vary; the gastrointestinal tracts of adults typically absorb 10-15 percent of ingested lead, while those of pregnant women and children can absorb up to 50 percent.

New research indicates that no amount of lead is safe for a child; yet according to the U.S. Centers for Disease Control and Prevention, almost one million American children under the age of six have elevated levels of lead in their blood. Even low lead doses are a concern for children, since continuing exposure can add up to a significant dose over time.

Studies show that even low concentrations of lead can cause permanent damage including reduced IQ, learning disabilities, shortened attention span, aggressive behavior and impulsivity. Some scientists believe that low-level chronic lead exposure in childhood can alter secretion of the human growth hormone, stunting growth and promoting obesity. In adults, lead has been associated with the high blood pressure (hypertension), hardening of the arteries (atherosclerosis) and dementia.

Currently, SDWA prohibits the use of pipes that are not “lead free” to install or repair a public water system or plumbing that provides water for human consumption.⁵ While on its face, this provision seems health protective, the definition of lead free is not protective at all. “Lead free” refers to any pipes and pipe fittings containing not more than 8.0 percent lead, which is remains an unacceptable and preventable source of exposure, especially for a fetus and young child whose developing bodies are particularly vulnerable to low levels of lead exposure. As such, the change in AQUA to define “lead free” in pipes, pipe fittings, plumbing fittings, and fixtures as “not more than a weighted average of 0.25 percent” lead will bring a significant public health benefit – especially to areas plagued with old pipes that leach lead into the tap water. For an area like Washington, D.C. which faced its own lead poisoning crisis just a few years ago, this provision could prevent future problems and protect unsuspecting families from the detrimental development effects associated with lead poisoning.

⁵ 42 U.S.C. § 300g-6.

I've highlighted a few of the improvements that AQUA will bring to the SDWA; the remainder of my written testimony will focus on the improvements to the Endocrine Disruptor Screening Program (EDSP) proposed in Section 16 of the AQUA legislation.

Addressing the Problem of Endocrine Disrupting Chemicals in Drinking Water.

The endocrine system is a complex network of glands and hormones that regulates many of the body's functions, including growth, development and function of organ systems. The endocrine glands -- including the pituitary, thyroid, adrenal, thymus, pancreas, fat tissue, ovaries, and testes -- release carefully-measured amounts of hormones into the bloodstream that act as natural chemical messengers. These messengers travel to different parts of the body where they control and adjust many life functions including reproduction, lactation, energy balance, growth and development of nearly every organ system in the body including the brain and nervous system.

For many decades, scientists have recognized that synthetic chemicals are capable of interfering with the action of hormones produced within the body. This interference scrambles the body's key signaling pathways resulting in a phenomenon known as endocrine disruption. Endocrine disruption was first described in the 1990's when environmental chemical contamination was associated with numerous wildlife abnormalities including observations of male fish with female characteristics, impaired reproduction in birds, and alligators with small penises.⁶ Subsequent laboratory animal studies have confirmed that exposure to some endocrine-disrupting chemicals, especially during development, can result a wide range of adverse effects including birth defects of the genitals, changes in sex hormone levels, infertility or increased time to pregnancy, cancer, and altered development of the brain and nervous system. The effects described in wildlife and laboratory animals coupled with observations of an overall decline in sperm counts in adult men, increased rates of infertility in couples, increased rates of birth defects of the genitals including malformed penises and undescended testicles in infant boys, and increased rates of testicular and other hormone-dependent cancers raised concern that endocrine disrupting chemicals were not only affecting wildlife, but also could be harming human health.

In response to these concerns, in 1996, Congress passed in amendments to the FQPA and SDWA that mandated EPA to create an Endocrine Disruptor Screening and Testing Program to

"...develop a screening program, using appropriate validated test systems and other scientifically relevant information, to determine whether certain substances may have an effect in humans that is similar to an effect produced by a naturally occurring estrogen, or other such endocrine effect as the Administrator may designate."⁷

The laws required EPA to develop a screening program by August 1998, to implement the program by August 1999, and to report on the program's progress by August 2000. Unfortunately, EPA has missed every deadline and was over a decade late when it issued the first chemical test orders in October, 2009. This first round of orders will require screening of only 67 chemicals (mostly pesticides) and includes a number of chemicals that are already well-known endocrine disruptors.⁸

⁶ Colborn T, vomSaal FS, Soto AM. Developmental effects of endocrine disrupting chemicals in wildlife and humans. *Environ Health Perspect* 1993;101:378-84.

⁷ 21 U.S.C. §346a(p)(1).

⁸ http://www.epa.gov/endo/pubs/edsp_orders_status_050610.pdf

None of the contaminants in this first round of test orders were chosen because they are drinking water contaminants, though Section 136 of the SDWA Amendments states that:

In addition to the substances referred to in [the FQPA], the Administrator may provide for testing under the screening program authorized by [the FQPA] of any other substance that may be found in sources of drinking water if the Administrator determines that a substantial population may be exposed to such substance.⁹

Congress recognized that drinking water was likely to be a significant source of exposure to endocrine disrupting chemicals, yet, EPA has never used the authority granted by Congress under the SDWA, and has not prioritized drinking water contaminants for endocrine disruption testing. Unfortunately, in the 14 years since the amendments were passed, there has been mounting evidence documenting the presence of endocrine disrupting chemicals in drinking water sources. These contaminants are causing further wildlife contamination and deformities and are concerning for their potential harm to human health. This contamination is threat to public health that must be addressed.

EPA must do a better job of testing and regulating drinking water contaminants.

Despite EPA's failure to adequately test drinking water for endocrine disrupting effects, other reliable scientific studies have documented the endocrine disrupting effects of multiple contaminants in our nation's waterways, including in the water that millions of people rely on for drinking. Studies by the U.S. Geological Survey (USGS) have revealed a chemical soup of pharmaceuticals, steroid hormones, unregulated pesticides, flame retardants, rocket fuel chemicals, plasticizers, detergents, fragrance ingredients and stain repellants in drinking water sources (ground water and surface water) and in drinking water itself.^{10 11 12} Among the chemicals most commonly detected in these national surveys are known and suspected endocrine disruptors, including the antibacterial chemical triclosan, alkylphenols and alkylphenol polyethoxylates, bisphenol A, musk fragrances, and pharmaceutical estrogens. Because conventional drinking water treatment does not eliminate many contaminants, drinking water is likely to be contributing to our daily exposure to these chemicals. Although they are found in low levels in the water, these levels are nonetheless concerning because hormones normally circulate and exert their effects in the body at the parts per billion to parts per trillion level. Water is certainly not the only source of these chemicals, but trace amounts from one source add up with traces from other sources, and the sum total becomes a threat to human health.

The soup of chemicals that has been measured in drinking water sources also exists in the majority of American's tested for chemicals such as triclosan, phthalates, BPA, flame retardants, perchlorate and

⁹ 42 U.S.C. § 300j-17.

¹⁰ Kolpin DW, Furlong ET, Meyer MT, Thurman EM, Zaugg SD, Barber LB, Buxton HT. Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999-2000: a national reconnaissance. *Environ Sci Technol*. 2002 Mar 15;36(6):1202-11.

¹¹ Barnes KK, Kolpin DW, Furlong ET, Zaugg SD, Meyer MT, Barber LB. A national reconnaissance of pharmaceuticals and other organic wastewater contaminants in the United States--I) groundwater. *Sci Total Environ*. 2008 Sep 1;402(2-3):192-200.

¹² Focazio MJ, Kolpin DW, Barnes KK, Furlong ET, Meyer MT, Zaugg SD, Barber LB, Thurman ME. A national reconnaissance for pharmaceuticals and other organic wastewater contaminants in the United States--II) untreated drinking water sources. *Sci Total Environ*. 2008 Sep 1;402(2-3):201-16.

other contaminants.¹³ Biomonitoring has also confirmed that we are exposed to multiple chemicals at the same time and the impacts of exposure to these chemicals as a mixture are not very well understood but are concerning for additive or multiplicative effects. For example, certain phthalates are well-characterized for decreasing testosterone production and mixtures of these phthalates at relatively low individual doses is capable of lowering of testosterone just as is seen after exposure to one phthalate at a high dose. Therefore, exposure to a mixture of phthalates and other anti-androgenic chemicals in drinking water, even at very low doses, could be harmful because of this mixture effect.

In addition to the known and suspected endocrine disrupting chemicals in water, there are potentially hundreds of other chemical contaminants for which we have no information about their endocrine disrupting effects. The result of the decade of foot-dragging on testing chemicals for hormonal activity means that the vast majority of chemicals in our water supply and environment are “unknowns” when it comes to their hormonal effects. Due to the well-known flaws in the Toxic Substances Control Act (TSCA), almost all chemicals come onto the market with no toxicity information, and older chemicals remain untested too.

Legislation is necessary to mandate testing of drinking water contaminants for endocrine disruption.

Though EPA has had the authority to require endocrine disruption screening and testing of drinking water contaminants, it is not mandated to do so and thus far has not exercised that authority. This is a missed opportunity to identify a number of chemicals to which millions of Americans are exposed and may present a threat to their health. The AQUA will require EPA to expand the EDSP beyond testing only pesticides to include water contaminants.

AQUA will strengthen the EDSP at EPA by requiring four major changes:

1. Require testing of drinking water contaminants for endocrine disruption on a reasonable and achievable timeline.
2. Accelerate the identification of endocrine disrupting substances when scientific evidence already exists, thereby making the EDSP more efficient.
3. Promote transparency and public participation in the EDSP.
4. Create a process for updating and revising testing protocols to be consistent with current scientific knowledge.

Testing of drinking water contaminants on a reasonable and achievable timeline.

The AQUA requires EPA to publish a list of 100 drinking water contaminants within one year of enactment and requires that they be screened within four years. This is a very reasonable timeframe since EPA has just issued test orders for 67 chemicals in one year with the test results due to EPA in just two years. AQUA could, in fact, create a shorter timeline for test results to be submitted since these screening tests can be conducted relatively quickly and the tests have already been validated at

¹³ Centers for Disease Control and Prevention. National Report on Human Exposure to Environmental Chemicals. Fourth Report, 2009. <http://www.cdc.gov/exposurereport/>.

approved contract labs. The Act further requires EPA to identify and schedule testing of other substances with the goal of testing at least all of the 561 chemicals on the Preliminary Contaminant Candidate List within ten years of enactment of the Act. Again, this represents an average of less than 60 chemicals a year for issuing testing orders and should not create an unreasonable work load for EPA.

Accelerated identification of endocrine disrupting substances.

Importantly, for substances known to contaminate drinking water, to which a substantial portion of the population is exposed, and is suspected to be an endocrine disrupter, EPA can put the screening of that substance on an accelerated track which will provide for more timely protection of public health. Under this provision, EPA can identify a chemical as an endocrine disruptor by substituting scientifically relevant information on endocrine disrupting effects. EPA will have the authority to identify equivalent scientific studies published in peer-reviewed publications which meet the criteria of the screening and testing battery. For chemicals where the mode of action has already been sufficiently described, for example, as in phthalates which are known to interfere with testosterone production, the chemical should not be required to undergo repeat and redundant testing that will cost more time and money. Instead the chemical should be quickly identified as an endocrine disruptor and be subject to determination of an appropriate drinking water standard.

One chemical which will qualify for the accelerated track is perchlorate. Perchlorate is a contaminant that comes from rocket fuel, fireworks, road flares, fertilizer, and other sources. It is known to interfere with the normal function of the thyroid gland.¹⁴ Iodine is needed by the thyroid in order to create thyroid hormones. Normally, iodine is transported into the thyroid gland through an energy-requiring mechanism called the sodium-iodide symporter. Perchlorate blocks this transport and prevents uptake of iodine into the gland, thereby interfering with the production of these vital hormones. The mechanism of action for perchlorate has already been well-characterized and perchlorate is known to interfere with thyroid hormone action. Based on this reliable and repeated scientific evidence, perchlorate should not be subject to endocrine disruptor screening and testing but should be identified by EPA as a thyroid disrupting chemical and subjected to a drinking water standard. We don't need any further confirmation of the endocrine disrupting potential of perchlorate, instead EPA must set an enforceable drinking water standard for perchlorate that will protect pregnant women, children, and people with underlying thyroid disease or iodine deficiency. It is unconscionable that millions of people are drinking water contaminated with this known endocrine disruptor and remain unprotected.

Promotes transparency and public participation in the EDSP.

AQUA adds much needed public participation and public information dissemination provisions to the EDSP. One of the most difficult problems for the public is access to information about the potentially toxic chemicals lurking in consumer products, in our homes, and in our drinking water. The AQUA creates a publicly searchable database where information about the EDSP will be posted, including information about the status of a chemical, the schedule, and the testing results. Importantly, the database will also include the data evaluation records, which are the Agency's own evaluation of the

¹⁴ Benjamin C. Blount, James L. Pirkle, John D. Osterloh, Liza Valentin-Blasini, and Kathleen L. Caldwell. *Urinary Perchlorate and Thyroid Hormone Levels in Adolescent and Adult Men and Women Living in the United States*. Environmental Health Perspectives Volume 114, Number 12, December 2006.

testing results and will allow for public access to information about how screening and testing results were evaluated by the Agency.

Another important component for public participation that AQUA incorporates into the EDSP is a petition process by which the public may petition EPA either to add a substance to the list of chemicals that must be tested in the next four years or to identify a chemical to be included in the plan for identifying additional substances for testing in the subsequent ten years. A person may also petition the EPA to issue a test order on an accelerated basis. Most importantly, the petition process requires EPA to make a final determination about whether to grant or deny the petition within 90 days, ensuring that these public requests will not get hung up indefinitely in the Agency with no resolution.

Updating and revising testing protocols to be consistent with current scientific knowledge.

The screening and testing protocols required under the current EDSP are based on scientific knowledge that is outdated and needs to be updated. Some of the screening tests rely on methodology that is cumbersome, redundant, time-consuming and expensive. EPA should be able to replace these screens with newer tests that are based on high-throughput screens which are more efficient, less expensive and do not rely on animals. EPA should also expand the EDSP to include endpoints beyond estrogen, androgen and thyroid hormone disruption. There is emerging evidence that endocrine disruptors are also able to interfere with other hormone systems in the body including those that regulate fat metabolism and glucose (sugar) levels.

The need to expand and improve the EDSP has been recognized by scientific experts and prominent scientific societies have recently issued consensus statements speaking to this issue. The Endocrine Society evaluated the science on endocrine disruptors last year and concluded:

“The evidence for adverse reproductive outcomes (infertility, cancers, malformations) from exposure to endocrine disrupting chemicals is strong, and there is mounting evidence for effects on other endocrine systems, including thyroid, neuroendocrine, obesity and metabolism, and insulin and glucose homeostasis.”¹⁵

The Endocrine Society is the premier professional organization devoted to research on hormones and the clinical practice of endocrinology, comprised of over 14,000 research scientists and physicians from over 100 countries. This statement has since been endorsed by the American Medical Association. The American Chemical Society just issued a similar statement with additional recommendations for “More rapid advancement of the congressionally-mandated effort by the EPA, called the Endocrine Disruptor Screening Program (EDSP).”¹⁶

¹⁵ Diamanti-Kandarakis E et al. 2009 Endocrine-Disrupting Chemicals: An Endocrine Society Scientific Statement. Endocrine Reviews 30(4):293-342. http://www.endo-society.org/journals/scientificstatements/upload/edc_scientific_statement.pdf

¹⁶ American Chemical Society. Statement on Testing for Endocrine Disruption. Available at http://portal.acs.org/portal/PublicWebSite/policy/publicpolicies/promote/endocrinedisruptors/CNBP_023441.

AQUA will create a process for EPA to update and expand the EDSP to make it more efficient and consistent with current scientific knowledge. This is necessary to keep the Program scientifically relevant and credible.

In conclusion, AQUA would provide a much needed improvements in the Safe Drinking Water Act so that EPA may more effectively protect the quality of our nation's drinking water. From providing the DW SRF with more funding than it has ever had to improving the EDSP by mandating testing of drinking water contaminants, this bill, if enacted, will help ensure that all Americans continue to have access to some of the safest drinking water in the world.

We commend Mr. Markey for taking a leadership role in protecting the public's health by identifying endocrine disrupting chemicals in our drinking water sources. These provisions are an important step towards improving the EDSP and we look forward to working with you and your staff as this bill moves forward.

Thank you again for inviting me to testify before you today. I would be happy to answer any questions from the panel.

Sincerely,

A handwritten signature in cursive script, appearing to read "Sarah Janssen", with a long horizontal flourish extending to the right.

Sarah Janssen, MD, PhD, MPH

Staff Scientist

Natural Resources Defense Council